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10/597,343	07/20/2006	Tadahiro Ohmi	SUGI0166	9535

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EXAMINER
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MCCALISTER, WILLIAM M

ART UNIT	PAPER NUMBER
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3753

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/597,343	<b>Applicant(s)</b> OHMI ET AL.	
	<b>Examiner</b> WILLIAM MCCALISTER	<b>Art Unit</b> 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 10-12 and 15-25 is/are pending in the application.
- 4a) Of the above claim(s) 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 10-12, 15-21 and 23-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/15/2010</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Newly submitted claim 22 is directed to an invention (species) that is independent or distinct from the invention originally claimed for the following reasons: Claim 22 is drawn to a normally open fixed capacity type diaphragm valve, whereas the mutually exclusive species of a normally closed fixed capacity type diaphragm valve was elected by original presentation (see claim 2).

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 22 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claims 4-7, 13, 14 and 22 have been withdrawn. Claims 8 and 9 have been cancelled. Claims 1-3, 10-12, 15-21 and 23-25 are pending for immediate consideration.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 10-12, 15-19, 24 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 18, 19, 24 and 25

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include the following recitation (at step (g)): "when vibration is generated at a time when a first step actuator operating pressure rises" (or drops). This characteristic was previously rejected as indefinite. During a telephone conversation on 2/3/2010, Wesley Ashton explained that this phrase was meant to refer to a positive change between the initial intermediate step operating pressure and the second intermediate step operating pressure (both of which occur over a time "t"; see FIG 15). However, the claim is presently written such that the initial and second intermediate step operating pressures are not introduced until after this recitation, and so that a "first step actuator operating pressure" is introduced prior to this recitation. The claim therefore appears to refer to the pressure that occurs concurrently with the first step actuator operating pressure, and therefore at time  $A_v$  (rather than a difference between iterative pressures occurring at time "t"). If the difference between intermediate step operating pressures is intended, it is suggested that the terminology "intermediate step operating pressures" be used, rather than "first step actuator operating pressure", and that the recitation be placed later in the claim than the occurrences of its proper antecedent bases. (It is also suggested that dividing step (g) into several sub-steps would serve to make the claims less obscure and more readily comprehensible.)

### ***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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5. Claims 1-3, 20, 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns (US 5,970,430) in view of Wheeler (US 5,409,037).

Regarding claims 1 and 21, Burns discloses a multi-step method (i.e., the following steps do not occur simultaneously) comprising:

(a) providing a fluid passage (inherently, all valves are connected to fluid passages) openable by operation of an actuator operating type valve (see col. 29 lines 29-35) provided on the fluid passage of a pipe passage, wherein the fluid passage has a nearly constant (i.e., constant or non-constant) pressure inside the pipe passage (when the valve is closed, for example);

(c) moving a valve body (a valve body is inherent to every valve) of the actuator operating type valve from a state of full closing toward a direction of valve opening to a first degree of valve opening by increasing or decreasing a driving input to an actuator of the actuator operating type valve (see col. 28 lines 9-23, specifically lines 10-12 and the "ten step" process), wherein the driving input is increased or reduced to a first prescribed set value (that which corresponds to the step size) in order to prevent a water hammer in the fluid passage (intended result of the step does not further define the step; moreover this result is inherently achieved because of Burns' stepped opening process, where the first prescribed set value results in the step-wise movement), wherein the first prescribed set value is a step pressure setting signal (it corresponds to a valve position that would produce a pressure setting),

(d) holding the driving input to the actuator at the first set value for a first period of time (the time between steps); and then

(e) further increasing or decreasing the driving input to move the valve body from the first degree of valve opening to a state of full valve opening (see col. 28 lines 9-12) so the fluid passage is opened without causing a water hammer (it inherently avoids water hammer of a degree that would occur in a non-stepped opening procedure).

As discussed at col. 29 lines 25-35, Burns contemplates the use of his method with many types of actuator-valve systems, but does not disclose a system comprising a vibration detecting sensor. Wheeler teaches that actuator-valve systems were known in the art which comprise a vibration sensor (12, 16, where the sensor detects acoustics that are determined by flow and pressure characteristics, as claimed) which is connected to a feedback control loop so that the valve is closed when vibration (noise) reaches a given setpoint, thereby preventing the vibration from exceeding an upper limit. To diagnose operation of such a valve-actuator system, it would have been obvious to use Burns' method therewith

Regarding claims 1 and 2, Burns discloses the method as claimed (see the mapping of Burns above), and contemplates the use of his method with many types of actuator-valve systems, but does not disclose a system comprising a normally-closed, constant volume diaphragm valve. However, normally-closed, constant volume diaphragm valves were well-known in the art at the time of invention (see JP 11-118049 for

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instance, well-known status also admitted by virtue of Applicant's failure to traverse the prior assertion of well-known status, and also admitted by Applicant in the prosecution of related co-pending application 11/762,987 in the Remarks of 3/17/2009). It would have been obvious to perform Burns' method on such a valve and actuator to diagnose the operation thereof. It also would have been obvious to utilize a vibration sensor and feedback control circuit with such a valve and actuator, as taught by Wheeler, to provide feedback controlled operation of such a system.

Regarding claim 3, Burns discloses a pressure rise value of the fluid passage to be made to be within 10% of a first steady-state pressure value before the valve is made to open (which is proportional to the step size of, for example 1%, see col. 28 line 11). Burns also discloses the first period of time to be dependent on the size and response time of the valve and actuator (col. 30, lines 11-15), and that the method can be performed on many sizes and types of valves and actuators (col. 29, lines 28-45), but does not disclose the first period of time to be less than 1 second. It would have been obvious to one of ordinary skill in the art at the time of invention to perform Burns' method on a valve and actuator having a short response time, such that the first period of time is less than 1 second, in order to diagnose the operational characteristics of such a valve and actuator.

Regarding claims 20 and 23, Burns discloses the invention as claimed (see the mapping of Burns above) with exception to the claimed opening time. Burns does

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however disclose that valve operating times depend on the size and type of valve and valve actuator being tested (col. 30 lines 11-15), and that his diagnostic method can be performed on many sizes and types of valves and actuators (col. 29 lines 25-35). Valves and actuators of myriad different sizes were known in the art at the time of invention, and it would have been obvious to perform Burn's method on valves and actuators having short response times (such that the opening time is within the claimed range), in order to diagnose the operational characteristics of such a valve and actuator. It also would have been obvious to utilize a vibration sensor and feedback control circuit with such a valve and actuator, as taught by Wheeler, to provide feedback controlled operation of such a system.

#### ***Allowable Subject Matter***

6. Claims 10-12, 15-19, 24 and 25 would be allowable if rewritten to overcome the rejections under 35 U.S.C. §112, 2<sup>nd</sup> ¶ as set forth above.

#### ***Response to Arguments***

7. Applicant's arguments filed 1/15/2010 have been fully considered but they are not persuasive.

a. Applicant contends that Burns does not disclose a multi-step method (Remarks, pp. 27-28). This argument is not explained. It is the Examiner's position that Burns clearly discloses a multi-step method, since the disclosure reads on the claimed multi-step method. Alternatively, the recitations occurring



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in the preamble have not been given patentable weight. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

b. Applicant contends that Burns does not teach closing the valve without causing water hammer (Remarks, pp. 27-35), because water hammer is not a term of degree.

i. Applicant points to an advertisement by a supplier of valves (at <http://www.omega.com/techref/waterhammer.html>) which states that water hammer may damage pressure sensors and requires extensive effort to prevent. In response, these terms are themselves terms of degree. For example, how much effort is “extensive”, and how sensitive are the pressure sensors? Also, the accuracy of this statement is questionable, because product suppliers have every incentive to cast their products in the best possible light in order to increase sales, including the creation and exaggeration of problems which their products solve (Omega’s “snubbers” prevent “destructive water hammer”, where the modifying adjective “destructive” also tends to show that water hammer is not necessarily destructive, else the phrase would be unnecessarily

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duplicative). Applicant argues that this position is "erroneous", "unsubstantiated", and "not based on any facts" (Remarks, p. 29). In response, it is not the Examiner's onus to provide evidence to substantiate a finding that Applicant's evidence lacks credibility. Rather, the MPEP requires articulation of the reason for such a finding.

ii. Applicant argues that the additional description of "water hammer" in the *Lahlou Fact Sheet* (exhibit A) shows that the term is not a term of degree. In response, Lahlou's description is seen as entirely consistent with the notion that "water hammer" is a term of degree. For instance, the terms *sudden* and *bang* are used to describe water hammer, where these are terms of degree. (Where does one draw the line between suddenly and gradually, or between a bang and a whimper?). Similarly, the *Home Repair Page* uses terms of degree such as "quickly" and "noise problem".

iii. Consistent with all of the proffered descriptions, "water hammer" is "the concussion and accompanying noise that result when a volume of water moving in a pipe suddenly stops or loses momentum" (Dictionary.com). As such, "water hammer" is a term of degree, since these physical effects (noise) will occur to a greater or lesser extent if fluid flow of a greater or lesser extent is suddenly stopped. Because Burns' valve closure occurs in a step-wise fashion (see col. 28 lines 9-23, specifically lines 10-12, describing method step 304), the flow rate through his valve is decreased before complete valve closure. Also, this stepwise

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closure lessens the extent to which the entire flow path is “suddenly” closed. (These are the same operational characteristics which Applicant's valve exploits to reduce water hammer.) As such, Burns' method “avoids water hammer” of a degree that would have occurred if the flow rate had not been decreased before complete valve closure, or if the entire process of valve closure were performed suddenly, rather than in a stepwise fashion. The fact that Applicant has recognized another advantage which would flow naturally from the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Since Burns operates in the same manner that is claimed, it is seen to avoid causing water hammer to the same extent of Applicant's claimed method. If not, then Applicant's claimed invention would face problems under § 112 1<sup>st</sup> ¶. If there is something else that is required to suppress water hammer, then Applicant is encouraged to claim the associated steps.

- c. Applicant argues that there is no reasonable expectation of success in “modifying” Burns' method (Remarks, p. 24). In response, the Examiner merely recognizes the inherent results of applying Burns' method to any size valve and actuator. The expectation of this success derives from Burns explicit disclosure that his method can be performed on many types of valves and actuators (col. 29, lines 21-44).

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d. Applicant argues that Examiner has failed to establish a prima facie case of obviousness because there has been set forth no legitimate reason to modify Burns (Remarks, p. 25). The Examiner maintains that Burns' disclosed purpose of testing the operation of a valve and actuator is a legitimate reason to perform Burns' test on a valve and actuator of any given size, type, or operating speed.

e. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

9. The arguments not addressed herein have been considered but are moot in view of the new grounds of rejection (Wheeler discloses the vibration detecting function).

10. It is noted that the previously presented double patenting rejection has been withdrawn in light of Applicant's amendments directed to the vibration sensing step.

### ***Conclusion***

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM MCCALISTER whose telephone number is (571)270-1869. The examiner can normally be reached on Monday through Friday, 9-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/WILLIAM MCCALISTER/  
Examiner, Art Unit 3753

/STEPHEN HEPERLE/  
Primary Examiner, Art Unit 3753

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